

INFORMATION SHEET

ORDER NO. R5-2009-_____
SUTTER HOME WINERY
SUTTER HOME WINERY WESTSIDE FACILITY
SAN JOAQUIN COUNTY

Sutter Home Winery owns and operates a wine processing facility located at 18667 Jacob Brack Road, Lodi, San Joaquin County. The facility was constructed in 1998. The facility is presently operated as a non-distilling, non-crushing, non-fermenting wine finishing and storage facility. No bottling or packaging of wine is presently performed at the facility. However, the Discharger has decided to begin grape crushing and fermenting in addition to continuing wine storage and stabilization activities. At this time, the Discharger is not proposing to begin bottling activities at the site.

Report of Waste Discharge Submittal

The Report of Waste Discharge (RWD) was submitted to allow an expansion of activities at the site. The Discharger submitted an RWD dated 31 October 2008 for treatment and land application of wastewater generated at the facility and an expansion that will allow grape crushing and fermentation. Additional information was submitted on 27 February and 27 May 2007. Because the winery has not begun crushing grapes, wastewater generation rates and quality were estimated from another winery that the Discharger owns and operates in St. Helena, Napa County.

Wastewater Generation

Wastewater is, or will be, generated in tank cleaning and sanitation activities, portable clean-in-place system activities, and cooling system condensate. Stormwater that falls on the winery and mixes with wastewater is treated as wastewater. Because the Discharger has limited wastewater storage capacity wastewater cannot be stored until the summer growing season. Wastewater will be discharged to Land Application Areas (LAAs) all year. Winery wastewater is typically high in Total Dissolved Solids (TDS), Fixed Dissolved Solids (FDS), biochemical oxygen demand, and nitrogen concentrations.

Wastewater flow rates are anticipated to vary from approximately 43,000 to 120,000 gallons per day. The highest wastewater flows are expected during grape crushing activities. Waste Discharge Requirements (WDRs) Order No. R5-2002-0034 allowed a monthly average dry weather flow rate of 16,000 gallons per day (gpd). The tentative WDRs allow a monthly average maximum flow limit of 3.8 million gallons per month or an annual total of 30 million gallons of wastewater/ stormwater mixtures.

The flow limit will allow the Discharger flexibility in managing wastewater application because in most months the wastewater generation will be less than the monthly average limit. The total flow limit is designed to control the total loading rate of the land application area with waste constituents. The Order includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area Requirements that will prevent nuisance conditions and/or overloading the land application areas.

Wastewater is collected in wastewater sumps and discharged to Ponds No. 1 and 2. The ponds are double lined with synthetic liners and are equipped with aerators. From the ponds,

wastewater is applied to the LAAs. Historically, 15.5 acres of LAAs were available at the facility; as part of the facility expansion an additional 92 acres of LAA is immediately available, and an additional 79 acres can be used for land application once configured to comply with the Order.

Land Application Areas

The FDS loading rate is estimated to be 1,651 lbs/ac•year. Significant efforts to maintain a low FDS concentration in the winery wastewater will be required to minimize the loading rate and protect groundwater quality. The loading rate presented above is based on a winery wastewater FDS concentration of 730 mg/L. The RWD indicates that value is achievable with significant source control, but evapoconcentration in the treatment ponds will increase the value in treated wastewater (as well as reduce the amount of wastewater to be applied). The effluent limit included in the WDRs is to be applied at the outflow of the last (downstream) treatment pond (Pond No. 2). More than one limit for FDS is provided; a daily and monthly maximum of 1,500 mg/L, and an annual average of 1,100 mg/L. The daily/monthly maximum of 1,500 is expected to be achievable year round with source control. However, due to evapoconcentration in the wastewater ponds, FDS concentrations are anticipated to increase during the summer months.

Nitrogen compounds are not expected to degrade groundwater quality because the proposed nitrogen loading rate is less than the likely crop uptake rate. The nitrogen loading rate is estimated to be 79.2 lbs/ac•year; nitrogen crop uptake rate is estimated to be 200 lbs/ac•year. Uptake of nitrogen should not pose a problem for the Discharger unless the character of the wastewater changes in the future or higher loading rates occur.

The Discharger prepared an antidegradation analysis as part of the RWD. The study reports treated wastewater with an FDS concentration of 1,500 mg/L at an annual flow rate of 28.4 million gallons per year can be applied to the LAAs without resulting in increased FDS concentrations above the calculated TDS ambient groundwater concentration of 607 mg/L. Substantial amounts of low FDS supplemental irrigation water is required in the management plan. High quality irrigation water is available from the Woodbridge Irrigation District (WID) irrigation canal, which is adjacent to the winery.

Because wastewater will not provide adequate water to meet the crop demand, supplemental water will be applied to the LAA. WID irrigation water will be used to provide supplemental irrigation water. The irrigation water quality was characterized from four water sampling events; the average FDS concentration was 50 mg/L.

Stormwater

Stormwater is handled differently depending upon where it falls, and if it has mixed with wastewater. The stormwater pond has a capacity of approximately 4.9 Mgal. Stormwater draining from roofed areas and surrounding surface areas not mixed with wastewater is discharged to the stormwater pond. Stormwater that falls onto exterior tank and wine processing areas without roof cover is collected in the facility's wastewater drainage system.

During winery operations, the wastewater/stormwater mixture is pumped to the wastewater ponds. However, during high precipitation events when winery operations are not occurring the sumps are flushed to remove residual wastewater from the drainage area, piping, and sumps. That wastewater/stormwater mixture is discharged to the wastewater ponds. After the sumps discharge three sump volumes, subsequently collected stormwater is routed via an automated valve to the stormwater pond.

Stormwater quality has been monitored at the facility since 2002. The data collected shows that the Discharger's program to separate wastewater from stormwater has been generally successful. The Monitoring and Reporting Program requires continued monitoring of the stormwater pond so the effectiveness of the wastewater separation from stormwater can be determined.

Background Groundwater Quality

The Discharger has investigated on-site groundwater quality by installing and sampling groundwater monitoring wells, sampling the water supply well, and performing 11 direct push soil borings and collection of grab groundwater samples.

The groundwater data indicates highly variable groundwater quality across the site. All of the reasons for the variability are not known; but the low groundwater gradient, past land use, localized discharge of both high and low quality wastewater/stormwater, and nearby irrigation canals are probable influences. This Order requires installation of additional wells and further evaluation of groundwater quality at the site. As presently understood, the following can be stated regarding TDS and Electrical Conductivity (EC) data:

- Although no winery wastewater has been applied in the new land application areas, many of the highest EC values reported came from samples collected there.
- Upgradient groundwater quality is highly variable. Along the upgradient property boundary, EC values ranged from 774 umhos/cm to 1,630 umhos/cm. The cause of the variability is unknown.
- The TDS and EC data collected at existing Ponds A and B may require further investigation. Although not conclusive, the data may indicate groundwater degradation associated with the ponds. The Discharger has stated the ponds will no longer be used for wastewater treatment or storage and will be decommissioned.

With respect to nitrate as nitrogen data:

- Although no winery wastewater has been applied in the new land application areas, many of the highest nitrate as nitrogen values reported came from samples collected there.

- Upgradient groundwater quality is highly variable. Along the upgradient property boundary nitrate as nitrogen values ranged from 0.41 mg/L to 37.5 mg/L. The cause of the variability is unknown.

Additional study of the nearby irrigation canals (including the abandoned canal that bisected the property previously and is shown on groundwater monitoring reports) is needed to understand the relationship between surface water quality and site groundwater quality. Groundwater quality in the supply well is significantly better than the shallow groundwater quality. However, that assessment is based on the data from only one well.

The Order requires a *Hydrogeologic Investigation* and a *Background Groundwater Quality Standard Report* that will determine the ambient groundwater value and compare that value to the average annual effluent limit included in the effluent limits. If the ambient value is higher than the annual average effluent limit, the Discharger may petition the Central Valley Water Board for consideration of increasing the effluent limit. If the FDS ambient groundwater value is lower than the annual average limit, the Discharger must submit a Facility Improvement Workplan that describes changes at the facility and an implementation schedule to comply with the ambient groundwater value (and Groundwater Limitation F.1). The Discharger may use the statistical methods found in Title 27 to develop background values.

Solids Disposal

Pomace and diatomaceous earth (DE) will be drained on a paved area equipped with drains that will collect leachate and/or stormwater. The WDRs prohibit placing pomace or other solid waste associated with the winery on unpaved ground because of the possibility wastewater leaching from the piles or of stormwater mobilizing wastewater constituents. The Discharger will have to dispose of pomace and diatomaceous earth at off-site areas because there is not adequate LAAs at the facility.

Effluent Limitations

An effluent limitation for FDS is included in the WDRs. Consistent with the Salinity Guidance Memo available on the Regional Board's webpage (<http://www.waterboards.ca.gov/centralvalley/cv-salts/progs-polic-rpts/salt-2007-guide-mem.pdf>), interim limits were established pending completion of the Background Groundwater Quality Standard Report. The limits are believed to be protective of groundwater quality but better characterization of groundwater quality is needed. The Discharger prepared an antidegradation study as part of the RWD. The study reports treated wastewater with an FDS concentration of 1,500 mg/L at an annual flow rate of 28.4 million gallons per year can be applied to the LAAs without resulting in increased FDS concentrations above the calculated TDS ambient groundwater concentration of 607 mg/L. (The mixed units are a result of the previous monitoring and reporting program which required monitoring of TDS concentrations in groundwater. In groundwater, the Antidegradation Analysis study assumed all TDS was in the form of FDS.) Substantial amounts of low FDS supplemental irrigation water is required for the plan to succeed. High quality irrigation water is available from the Woodbridge Irrigation District (WID) irrigation canal, which is adjacent to the winery. Because the annual average effluent limitation is lower (1,100 mg/L) than the concentration used in the Antidegradation Analysis, additional protection for groundwater quality may be provided.

Wastewater loading limits for the LAAs are included for Biochemical Oxygen Demand (BOD). The BOD limit is intended to minimize the possibility of odors being generated by the land application. The BOD limits are 300 lbs/ac•day and 100 lbs/ac•day as a cycle loading rate.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water from the facility is to the Mokelumne River. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the Maximum Contaminant Levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate and fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the

groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Groundwater monitoring has been conducted at the site and groundwater quality at the site is highly variable. The Antidegradation Analysis reported that groundwater would not be degraded by the discharge. However, better characterization of the groundwater quality is required and the proposed Order establishes effluent limitations below the concentrations included in the Antidegradation Analysis as a preventive measure to prevent degradation while the hydrogeologic studies are performed.

Treatment Technology and Control

Given the character of food processing wastewater, slow rate land treatment or secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. But slow rate treatment may not control all waste constituents such as FDS.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Groundwater degradation by nitrogen can be controlled by an appropriate screening, settling, and slow rate land application with cropping activities when crops are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. If not managed carefully, long-term land discharge of food processing wastewater is likely to degrade groundwater with dissolved solids (as measured by FDS). Source control is an effective means to prevent groundwater degradation by FDS.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. However, soil is expected to provide adequate buffering of acidic or basic wastewater.

Title 27

Title 27, CCR, Section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

The discharge of wastewater and the operation of storage facilities associated with a wastewater application can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

The discharge of wastewater is exempt from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27). The exemption, pursuant to Section 20090(b), is based on the following:

- The Regional Water Board is issuing waste discharge requirements,
 - These waste discharge requirements require the discharge to comply with the Basin Plan. Based upon available information, compliance with the Effluent Limitations and Land Application Area Requirements will result in compliance with the Basin Plan, as discussed below. As this facility does not currently exist as proposed in this Order, wastewater characterization and management practices were developed based upon best professional development using data obtained from similar facilities owned and operated by the Discharger. The compliance schedule in Provision G.1, requires that on or before 1 July 2013, the Discharger submit additional site-specific information on wastewater quality and background groundwater quality, and an evaluation of the impact of the wastewater discharge on the groundwater. Following receipt of this information, this Order may be reopened and revisions made to protect groundwater quality, if needed,
 - Groundwater quality is highly variable across the site. This Order contains a compliance study that requires the Discharger to further investigate groundwater quality and determine an ambient groundwater value. That ambient groundwater value will be used to determine the need for additional facility improvements.
 - The surrounding area contains numerous confined animal operations and a long history of intensive agricultural operation. Background groundwater quality is believed to be degraded by the historic use.
 - The Discharger has prepared an Antidegradation Study that shows wastewater with a FDS concentration of 1,500 mg/L could be mixed with WID supplemental irrigation water and applied to LAAs with no groundwater degradation. This Order limits the treated wastewater (effluent from Pond No. 2) FDS concentration to a monthly maximum of 1,500 mg/L and an annual average of 1,100 mg/L.
 - The Discharger is increasing the LAA acreage from 15.5 acres, to an immediately available 107.5 acres; an additional 79 acres are available for use in the future.
 - The Discharger has committed to source control in the winery which is anticipated to minimize the salinity of the discharge.

- The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order includes winery wastewater, wastewater pond, stormwater pond, land application area, solids, and groundwater monitoring. In order to adequately characterize wastewater, the Discharger is required to monitor for BOD, pH nitrogen compounds, dissolved solids (TDS and FDS), sodium, chloride, and standard minerals.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of food processing wastewater occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation prove to be inadequate. Background groundwater quality is characterized but the high variation in groundwater quality indicates additional hydrogeologic study is needed. Determination of background quality has not been formalized. The Order requires that determination.

Reopener

The conditions of discharge in the proposed Orders were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible and that could involve substantial cost. It may be appropriate to reopen the Orders if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Orders. The CWC requires that waste discharge requirements implement all applicable requirements.

TRO: 6/4/09